



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/058,501	01/30/2002	Cheng-Chung Lee	BHT-3106-207	2209
7590 01/02/2004				
BRUCE H. TROXELL Suite 1404 5205 Leesburg Pike Falls Church, VA 22041			EXAMINER MARKHAM, WESLEY D	
			ART UNIT 1762	PAPER NUMBER

DATE MAILED: 01/02/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.	Applicant(s)	
10/058,501	LEE ET AL.	
Examiner	Art Unit	
Wesley D Markham	1762	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 and 2 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1 and 2 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 January 2002 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

1. Claims 1 and 2 are currently pending in U.S. Application Serial No. 10/058,501, and an Office Action on the merits follows.

Drawings

2. The formal drawings (2 sheets, 3 figures) filed by the applicant on 1/30/2002 have been received.
3. The drawings are objected to for the following reasons:
 - In Figure 1, the description of the "First Step", specifically the statement, "Select sands for blasting subject to the size of spot light source and number of pixels of the display to used", is unclear and confusing. For example, it is unclear to what "the size of spot light source" and the "number of pixels of the display to used" refer. Additionally, it is unclear how sands are selected "subject to the size of spot light source and number of pixels of the display to used".
 - In the "Fourth Step" of Figure 1, the word "polysiloxane" appears to be misspelled "polysilixane".
4. A proposed drawing correction or corrected drawings are required in reply to the Office Action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Specification

5. The abstract of the disclosure is objected to because of the following reasons:

- The phrase, "method includes the step of (a) selecting sands for blasting subject to the size of spot light source and number of pixels of the display to be used", is unclear and confusing. For example, it is unclear to what "the size of spot light source" and the "number of pixels of the display to be used" refer. Additionally, it is unclear how sands are selected "subject to the size of spot light source and number of pixels of the display to be used".
- The word "and" appears to be missing between the words "bathing," and "(d) baking".
- The word "polysiloxane" appears to be misspelled "polysilixane" on line 6 of the abstract.

Correction is required. See MPEP § 608.01(b).

6. The disclosure is objected to because of the following informalities:

- Page 1, lines 20 – 21: The phrase, "selecting sands for blasting subject to the size of spot light source and number of pixels of the display to be used", is unclear and confusing. For example, it is unclear to what "the size of spot light source" and the "number of pixels of the display to be used" refer. Additionally, it is unclear how (i.e., by what method) sands are selected "subject to the size of spot light source and number of pixels of the display to be used".

- Page 2, line 1: The word "and" appears to be missing between the words "bathing," and "(d) baking".
- Page 2, line 1: The word "polysiloxane" appears to be misspelled "polysilixane".
- Page 2, lines 16 – 18: The phrase, "select the size of sands for blasting subject to the number of light spots per inch based on the size of spot light source and number of pixels of the display to be used", is unclear and confusing. For example, it is unclear to what "the number of light spots per inch", "the size of spot light source" and the "number of pixels of the display to be used" refer. Additionally, it is unclear how (i.e., by what method) sands are selected "subject to the number of light spots per inch based on the size of spot light source and number of pixels of the display to be used".
- Page 3, lines 14 and 17: The word "polysiloxane" appears to be misspelled "polysilixane" in both lines.
- Page 3, lines 15 – 16: The word "baked" appears to be misspelled "backed" in both lines.
- Page 3, line 17: The word "cured" appears to be misspelled "curled".

Appropriate correction is required.

Claim Objections

7. Claims 1 and 2 are objected to because of the following informalities:

- Claims 1 and 2, step (d): The word "polysiloxane" appears to be misspelled "polysilixane" on three occurrences in step (d) of each claim.
- Claims 1 and 2, step (d): The word "baking" appears to be misspelled "backing".
- Claims 1 and 2, step (d): The word "cured" appears to be misspelled "curled".
- Claims 1 and 2, step (d): A period (".") is missing after the word "substrate" at the end of both claims.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

8. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

9. Claims 1 and 2 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter that was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.
10. Specifically, both Claims 1 and 2 require, "selecting the sizes of sands subject to the number of light spots per inch counted subject to the size of spot light source and number of pixels of the display to be used". However, after reviewing the

specification in its entirety, the examiner notes that there is no description or disclosure regarding how to select the sizes of sands subject to the criteria set forth by the applicant (i.e., subject to the number of light spots per inch counted subject to the size of spot light source and number of pixels of the display to be used). For example, even if one skilled in the art was to know or determine "the number of light spots per inch counted", "the size of spot light source", and the "number of pixels of the display to be used", the applicant does not disclose how to use this information to select the appropriate sand sizes for sandblasting. Therefore, one skilled in the art would not be enabled to use the claimed invention (i.e., to carry out the method of the claimed invention), and Claims 1 and 2 are rejected under 35 U.S.C. 112, first paragraph.

11. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

12. Claims 1 and 2 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

13. Regarding step (a) of Claims 1 and 2, the phrase, "selecting the sizes of sands subject to the number of light spots per inch counted subject to the size of spot light source and number of pixels of the display to be used", is unclear and confusing. For example, it is unclear to what "the number of light spots per inch", "the size of spot

light source" and the "number of pixels of the display to be used" refer. Additionally, it is unclear how (i.e., by what method) sands are selected "subject to the number of light spots per inch counted subject to the size of spot light source and number of pixels of the display to be used". Therefore, the scope of Claims 1 and 2 is unclear, and the claims are indefinite under 35 U.S.C. 112, second paragraph.

14. Regarding steps (b) and (d) of Claims 1 and 2, reference is made to the "refracting power" of the substrate / coating. This term is not defined by the specification of the instant application, and it is unclear to what the "refracting power" of a substrate and/or coating refers. Therefore, the scope of Claims 1 and 2 is unclear, and the claims are indefinite under 35 U.S.C. 112, second paragraph. For the purposes of examination only, the examiner has interpreted the term "refracting power" to be equivalent to "refractive index".

Claim Rejections - 35 USC § 103

15. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

16. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the

obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

17. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nippon Sheet Glass (JP 03-232744 A) in view of Savant et al. (USPN 6,241,903 B1), in further view of Brooks (USPN 3,578,837), Takiguchi et al. (USPN 5,408,344), and Varaprasad et al. (USPN 5,725,957), in further view of either Kato et al. (USPN 5,783,260) or Kato (USPN 5,049,414), and in further view of Kunimune et al. (USPN 4,656,238).
18. Regarding independent Claim 1, Nippon teaches a method of making non-reflection glass for CRTs, plasma display devices, and liquid crystal displays (i.e., a "light diffuser") (Abstract and page 243, col.1, as verified by an oral translation by a USPTO translator), the method comprising the steps of preparing a glass substrate (Abstract and page 243, col.1) and then sandblasting the surface of the glass substrate (Abstract), immersion coating (i.e., dipping) the sandblasted substrate in a polysiloxane solution to enable the substrate to be covered with a layer of polysiloxane (Abstract and page 244, col.2), and then baking the polysiloxane coated substrate thus obtained first at 50°C to forcibly dry the coating and then at 150 – 250°C for up to 10 minutes to cause the polysiloxane coating to be cured and formed into a layer of oxidized silicon having -O-Si-O-Si-O- chemical bonding on the

substrate (page 244, col.2). Nippon does not explicitly teach that the sandblasting step causes the substrate to become a "multi-frequency refracting substrate". However, unless essential process steps or limitations are missing from the claim, such a sandblasting step would have inherently caused the substrate to become a "multi-frequency refracting substrate" as claimed by the applicant (see, for example, page 4, lines 6 – 7, of the applicant's specification, in which the applicant notes that the coarse surface of the substrate (i.e., the surface obtained by sandblasting) achieves a multi-frequency refracting effect). Nippon does not explicitly teach selecting the sizes of sands (i.e., for sandblasting) subject to the number of light spots per inch counted subject to the size of spot light source and number of pixels of the display to be used. Specifically, Nippon is silent regarding the size of the sand used for sandblasting. However, Savant et al. teaches that, in the art of making a light diffuser by sandblasting a glass or plastic substrate (i.e., a process analogous to that of Nippon), the size, shape, and contour of the depressions and irregularities formed on the substrate by the sandblasting operation are determined by the mass, size, and shape of the sand particles, and the diffuser surface structure is determined by the size, shape, and contour of the aforementioned depressions and irregularities (Col.3, lines 47 – 57, and Col.8, lines 26 – 55). In other words, Savant et al. teaches that the size of the sand particles used in a sandblasting operation is a result / effective variable that determines the size, shape, and contour of the depressions and irregularities formed on the substrate, which in turn determine the diffuser surface structure. Therefore, it would have been obvious to one of ordinary

skill in the art to optimize the size of the sands used in the sandblasting step of Nippon as a result / effective variable through routine experimentation in order to achieve the substrate surface characteristics desired by the purveyor in the art. Additionally, Nippon does not explicitly teach that the substrate surface is sandblasted to have a refractive index of about 1.56 – 1.58 at 550 nm, and the oxidized silicon coating (i.e., the cured polysiloxane coating) has a refractive index of about 1.47 – 1.5 at 500 nm. Specifically, Nippon is silent regarding the relative refractive indices of the sandblasted substrate and the coating. However, Brooks teaches that, in the art of making a light diffuser by coating a sandblasted glass substrate with a lacquer (i.e., a process analogous to that of Nippon), the coating preferably has an index of refraction between that of the substrate and air (i.e., 1.0) (Col.4, lines 8 – 17). Further, Takiguchi et al. teaches that polysiloxane (i.e., the material of the coating of Nippon) has a relatively small refractive index of 1.4 to 1.5 (i.e., a value within the applicant's claimed range) (Col.10, lines 10 – 14). Varaprasad et al. teaches that, in the art of producing a light diffuser to reduce glare, the relative indices of refraction of the coating and the glass (i.e., the substrate) determine the thickness of the coating (Abstract, Col.1, lines 10 – 28). Based on these teachings, it would have been obvious to one of ordinary skill in the art to sandblast the substrate of Nippon to achieve any index of refraction value of greater than 1.5 (i.e., a range that encompasses the applicant's claimed range of about 1.56 – 1.58) because Brooks teaches that the index of refraction of the substrate is preferably greater than the index of refraction of the coating (i.e., the polysiloxane

coating of Nippon, taught by Takiguchi et al. to have a refractive index of 1.4 to 1.5) in a light diffuser, and Varaprasad et al. teaches that the relative refractive indices of the coating and the substrate in a light diffuser are variables that determine the thickness of the coating required. Please note that no criticality or unexpected results have been shown for a sandblasted glass substrate having a refractive index of about 1.56 – 1.58 in the context of the applicant's claimed invention. Nippon does not explicitly teach that the dip coating is performed with the polysiloxane solution in a bath at a temperature within about 5 – 18°C. Specifically, Nippon is silent regarding the temperature at which the immersion coating is performed. However, Kato et al. teaches that polysiloxane coatings can be applied to a substrate by dip coating at a bath temperature of 15°C (i.e., a value within the applicant's claimed range) (Col.10, lines 66 – 67, and Col.11, lines 1 – 9). Kato teaches that polysiloxane coatings can be applied to a substrate by dip coating at a bath temperature of 10°C (i.e., a value within the applicant's claimed range) (Col.6, lines 55 – 58, and Col.11, lines 7 – 25). It would have been obvious to one of ordinary skill in the art to perform the immersion (i.e., dip) coating process of Nippon with the polysiloxane solution at a bath temperature within the applicant's claimed range because Nippon is silent regarding the aforementioned temperature and both Kato et al. and Kato teach that such temperatures are operable for depositing polysiloxane coatings by dipping. Further, Nippon does not explicitly teach the baking conditions claimed by the applicant (i.e., 80°C for about 90 minutes, and then 125°C for about 15 minutes). However, Nippon does teach baking the polysiloxane

coated substrate first at 50°C for an unspecified time period to forcibly dry the coating, and then at 150 – 250°C (i.e., a higher temperature) for up to 10 minutes to cause the polysiloxane coating to be cured. Kunimune et al. teaches that, in the art of baking / curing polysiloxane coatings, the baking conditions (e.g., time and temperature) vary depending on the solvent used in the coating material and the thickness of the coating (Col.15, lines 54 – 61). Therefore, it would have been obvious to one of ordinary skill in the art to optimize / adjust the baking conditions, including the time and temperature of the first and second baking steps of Nippon, based on the specific solvent used in the polysiloxane coating composition and the thickness of the coating, which Nippon teaches can vary between 1 and 30 microns (page 244, col.2).

19. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nippon Sheet Glass (JP 03-232744 A) in view of Savant et al. (USPN 6,241,903 B1), in further view of Brooks (USPN 3,578,837), Takiguchi et al. (USPN 5,408,344), and Varaprasad et al. (USPN 5,725,957), in further view of either Kato et al. (USPN 5,783,260) or Kato (USPN 5,049,414), in further view of Kunimune et al. (USPN 4,656,238), and in further view of Maseda et al. (JP 59-202228 A) and Nishigaki (US 2002/0024158 A1).
20. The combination of Nippon, Savant et al., Brooks, Takiguchi et al., Varaprasad et al., Kato et al. or Kato, and Kunimune et al. teaches all the limitations of Claim 2 as set forth above in paragraph 18, except for a process wherein, instead of directly

sandblasting a glass substrate, a mold having a cavity is prepared, then sandblasted, and then used to produce the desired multi-frequency refracting substrate. However, it is the general purpose of Nippon to produce a non-reflection glass for CRTs, plasma display devices, and liquid crystal displays (i.e., a "light diffuser") (Abstract). Maseda et al. teaches a method of producing a glare-reducing substrate (i.e., a "light diffuser") analogous to that of Nippon except that, in the method of Maseda et al., the substrate is a thermoplastic resin instead of glass (Abstract). Like Nippon, the substrate of Maseda et al. is sandblasted to a desired roughness, coated with a polysiloxane resin, and heated to cure the coating (Abstract). Nishigaki teaches that, in the art of manufacturing a light diffuser on a thermoplastic resin substrate (i.e., a process analogous to that of Maseda et al.), it was known at the time of the applicant's invention to prepare a mold having a cavity, sandblast the mold cavity, and then use the mold to produce a substrate having the desired light diffusion pattern (i.e., to produce a "multi-frequency refracting substrate") (Abstract, paragraphs [0005], [0022], [0030], [0041], and [0042]). Therefore, it would have been obvious to one of ordinary skill in the art to prepare a mold having a cavity, sandblast the mold cavity, and then use the mold to produce a substrate having the desired light diffusion pattern (i.e., to produce a "multi-frequency refracting substrate") in the process of the combination of Nippon, Savant et al., Brooks, Takiguchi et al., Varaprasad et al., Kato et al. or Kato, and Kunimune et al. (i.e., in a situation in which it is desired to produce a resin light diffuser, as taught by Maseda et al., instead of a glass light diffuser, as taught by Nippon) with

the reasonable expectation of success and obtaining similar results (i.e., successfully producing a light diffuser having a desired surface pattern, regardless of whether the resin substrate surface itself is sandblasted, or a mold is sandblasted in order to transfer the pattern to the molded resin substrate).

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Matsunaga et al. (USPN 6,347,871 B2) teaches a method of forming an antiglare layer on a substrate by first sandblasting the substrate and then depositing multiple resin layers with different particle sizes on the sandblasted substrate.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Wesley D Markham whose telephone number is (703) 308-7557. The examiner can normally be reached on Monday - Friday, 8:00 AM to 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shrive Beck can be reached on (703) 308-2333. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9310.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

Wesley D Markham

Application/Control Number: 10/058,501
Art Unit: 1762

Page 15



WDM

Examiner
Art Unit 1762



SHRIVE P. BECK
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700